

Research and Development



AERIAL PHOTOGRAPHIC ANALYSIS OF THE CHEMETCO, INCORPORATED FACILITY

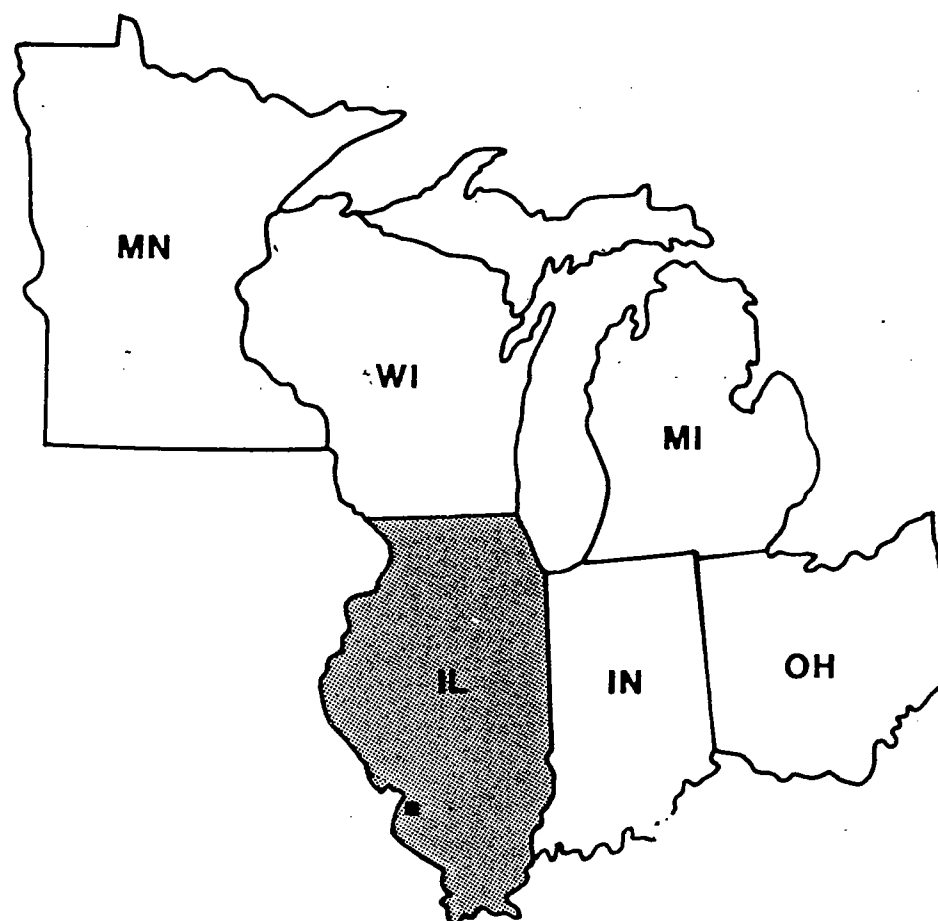
Hartford, Illinois

US EPA RECORDS CENTER REGION 5



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EPA Region 5



TS-AMD-85018/85603-10
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AERIAL PHOTOGRAPHIC ANALYSIS OF
THE CHEMETCO, INCORPORATED, FACILITY

Hartford, Illinois

by

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ABSTRACT

This report presents an analysis of historical and current aerial photographs that cover the 45-acre Chemetco, Incorporated, facility located about 2 miles south of Hartford, Illinois. The black-and-white and color photographs show the status of the site on June 10, 1978; December 14, 1980; April 23, 1982; and November 28, 1984. The analysis focused on identification of surface drainage, surface disturbances, seepage, vegetation damage, various types of waste disposal, and any potential threats to the environment.

Analysis of the black-and-white aerial photographs of June 10, 1978 reveal the Chemetco, Incorporated, facility was about 40 acres in size. The plant was in operation as slag piles, scrubber sludge piles, and scrap metal piles are evident. Photographs of December 14, 1980 reveal a growth in size of the slag piles and the scrubber sludge piles. Also, three waste lagoons have been constructed along with two waste pits, all of which were active. A small 1-acre expansion of the site at the south end is being used for truck parking. The color aerial photographs of April 23, 1982, reveal the slag and scrubber sludge piles have grown. The lagoon appears active while the adjacent waste pits appear full. The truck parking area at the south end of the site has been expanded by about 1 acre but is being used as a dump for waste materials. The color aerial photographs of November 28, 1984, reveal continued operations of the Chemetco facility. The slag piles and the scrubber sludge piles have grown. The waste lagoons are still in operation but the adjacent waste pits are being emptied by excavation equipment. The area at the south end of the site has been expanded by 3 acres to be used as a dump for waste material.

The analysis was performed by the U.S. Environmental Protection Agency's Environmental Monitoring Systems Laboratory in Las Vegas, Nevada, in support of the Agency's Environmental Services Division in Region 5 and Office of Solid Waste in Washington, D.C. This site is one of thirty-two in Illinois being monitored in order to ensure that activities at the sites comply with the provisions of the Resource Conservation and Recovery Act.

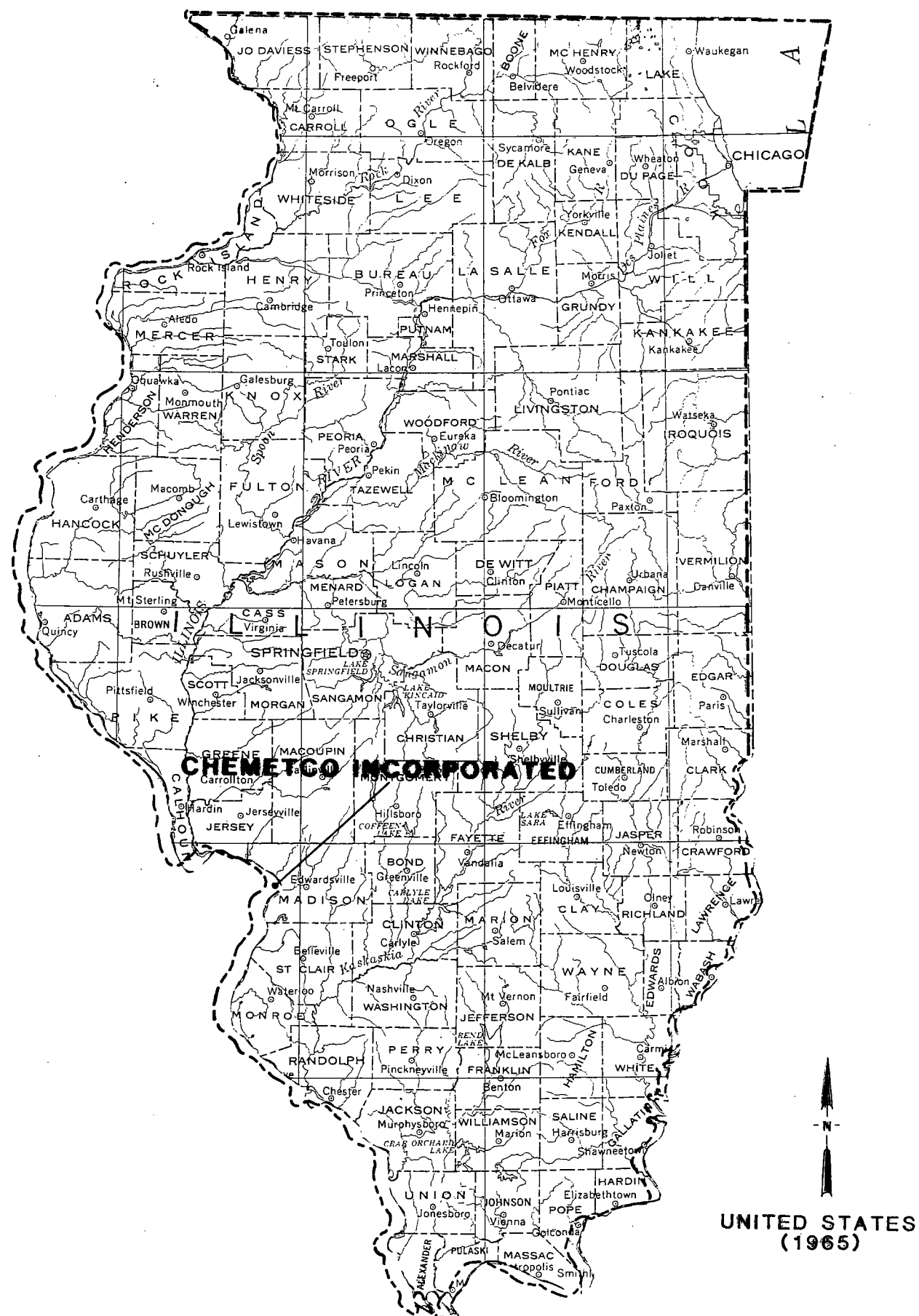


Figure 1. Study area location. Scale 1:2,500,000.

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INTRODUCTION

This report presents an analysis of historical and current aerial photographs that cover the Chemetco, Incorporated, facility south of Hartford, Illinois (Figure 1). The Chemetco, Incorporated, facility processes scrap metal to reclaim copper using two smelting operations and an electrolytic process. The product is a 99.9% pure copper cast which is then sold. In addition, waste slag from the smelting operations is also processed to recover lead and tin which is produced as a crude solder. Also, waste materials from the electrolytic process, containing nickel and silver are recovered. A final waste product from this process is scrubber sludge composed of zinc oxide.¹ The photographs show the status of the site on June 10, 1978, December 14, 1980, April 23, 1982, and November 28, 1984. The waste disposal practices used by the company are a major concern. The current analysis focused on identifying various types of waste disposal, surface drainage, seepage, surface disturbances, vegetation damage, and any potential threats to the environment.

This site is one of thirty-two sites in Illinois being monitored in order to ensure that activities at the sites comply with the provisions of the Resource Conservation and Recovery Act (RCRA). Table 1 lists all the sites being covered under this project. Analysis of all sites except for Chemetco, Incorporated, is based on single-date photographs.

The analysis was performed by the U.S. Environmental Protection Agency's (EPA) Environmental Monitoring Systems Laboratory in Las Vegas, Nevada, at the request of EPA's Environmental Services Division in Region 5 and Office of Solid Waste in Washington, D.C.

¹Letter of Communication from Kevin Pierard, RCRA Enforcement Section, U.S. Environmental Protection Agency, Region 5.

TABLE 1 (Revised).† ILLINOIS RCRA SITES COVERED UNDER SERIES TS-AMD-85018/85603‡

REPORT SERIAL NUMBER‡	SITE NAME	LOCATION
1	Allied Chemical	Metropolis, IL
2	Brighton Landfill	Brighton, IL
3	National Marine	Hartford, IL
4	Velsicol Chemical	Marshall, IL
5	Reilly Tar & Chemical	Granite City, IL
6	Taracorp, Inc.	Granite City, IL
7	Kerr McGee Corp.	Madison, IL
8	U.S. Industrial Chemicals	Tuscola, IL
9	Koppers Corporation	Carbondale, IL
	Monsanto Company	Sauget, IL
	Texaco, Inc.	Lawrenceville, IL
	Trojan Corporation	Wolf Lake, IL
10	Chemetco, Inc.	Hartford, IL*
11	ESL, Inc.	Joliet, IL
	Northern Petrochemical Company	Morris, IL
	Peoria Disposal, Inc.	Peoria, IL
	Peterson-Puritan, Inc.	Danville, IL
12	BFI/CECOS Landfill	Davis Junction, IL
	BFI/CECOS Landfill	Zion, IL
13	Modern Plating	Freeport, IL
	Northwestern Steel & Wire, Inc.	Sterling, IL
	U.S. Ecology Landfill	Sheffield, IL
14	Interlake	Chicago, IL
	Land & Lakes Landfill	Chicago, IL
	Paxton Landfill	Chicago, IL
15	CID	Calumet City, IL
	Inland Metals	Chicago, IL
	SCA Chemical Services	Chicago, IL
	Sherwin Williams	Chicago, IL
16	Gilbert & Bennett	Blue Island, IL
	GMC Electromotive	McCook, IL
	Mobil Oil Company	Cicero, IL

†The report numbers given in this table have been revised since the listing given in report number TS-AMD-85018/85603-7 and previous reports in this series.

‡To identify individual reports, add the report serial number to series number.

For example: TS-AMD-85018/85603-1

*Included in this report.

METHODOLOGY

Stereoscopic pairs of historical and current aerial photographs are used to perform the analysis. Stereo viewing enhances the interpretation because it allows the analyst to observe the vertical as well as horizontal spatial relationships of natural and cultural features. Stereoscopy is also an aid in distinguishing between various shapes, tones, textures, and colors that can be found within the study area.

Evidence of waste burial is a prime consideration when conducting a hazardous waste analysis. Leachate or seepage resulting from burial and dumping of hazardous materials might threaten existing surface or ground-water sources. Pools of unexplained liquid are routinely noted because they can indicate seepage from buried wastes and may enter drainage channels that allow contaminants to move off the site. An excellent indicator of how well hazardous materials are being handled at a site is the presence or absence of spills, spill stains, and vegetation damage. Trees and other forms of vegetation that exhibit a marked color difference from surrounding members of the same species are labeled "dead," "stressed," or "damaged" based upon the degree of noticeable variation. Vegetation is so labeled only after consideration of the season in which the photographs were acquired.

The U.S. Environmental Protection Agency's Statement of Procedures on Floodplain Management and Wetlands Protection (Executive Orders 11988 and 11990, respectively) requires EPA to determine if removal or remedial actions at hazardous wastes sites will affect wetlands or floodplains and to avoid or minimize adverse impacts on those areas. To aid in compliance with these orders, significant wetland areas located within and adjacent to this site have been identified and delineated.

Drainage analysis determines the direction a spill or surface runoff would follow. Direction of drainage is determined from analysis of the photographs and from U.S. Geological Survey topographic maps. Whenever they are available, 7.5-minute quadrangle maps (scale 1:24,000) are used to show site location and to provide geographic and topographic information.

Results of the analysis are shown on annotated overlays attached to the photos. The prints in this report have been enlarged when appropriate to show maximum detail. The following table provides specifications of the photographs used in this report.

TABLE 2. AERIAL PHOTOGRAPHY SPECIFICATIONS

Site name, location, and geographic coordinates	Figure	Date of acquisition	Original scale	Film type†	Photo source‡
Chemetco, Incorporated	3	6/10/78	1:40,000	B&W	ASCS
Hartford, IL	4	12/14/80	1:24,000	B&W	ASCS
(38°47.88'N 090°05.88'W)	5	4/23/82	1:6,000	Color	EMSL (82042)
	6	11/28/84	1:6,000	Color	EMSL (85018)

†Film type identification:

B&W: Black-and-white

‡Photo source identification:

ASCS: U.S. Department of Agriculture, Agricultural Stabilization and Conservation
Service, Salt Lake City, Utah.

EMSL: U.S. Environmental Protection Agency, Environmental Monitoring Systems
Laboratory, Las Vegas, Nevada.

The photographs used in this report are free of clouds and cloud shadows. The study area is shown on a State of Illinois map (Figure 1). The site location is portrayed on the Wood River, Illinois, 7.5-minute (1:24,000 scale) topographic quadrangle (Figure 2).



Figure 2. Site location, Chemetco, Inc. Scale 1:24,000.

ANALYSIS SUMMARY

Analysis of the black-and-white aerial photographs of June 10, 1978 reveal the Chemetco, Incorporated, facility was about 40 acres in size. The plant was in operation as slag piles, scrubber sludge piles, and scrap metal piles are evident. The facility has a waste treatment area and over 3,500 feet of ditch that contains liquid. A small discharge channel extends south from the site to Long Lake. Three waste pits were present in the slag piles.

Photographs of December 14, 1980 reveal a growth in the size of the slag pits and the scrubber sludge piles. Also, three waste lagoons have been constructed along with two waste pits, all of which were active. A small 1-acre expansion of the site at the south end is being used for truck parking. The waste pits in the slag piles were still in operation.

The color aerial photographs of April 23, 1982, reveal small changes in the site. The slag and scrubber sludge pits have grown and a fourth waste pit has been added in the slag pits. The lagoon appears active while the adjacent waste pits appear full. The truck parking area at the south end of the site has been expanded by about 1 acre but is being used as a dump for waste materials. Some vegetation stress is present adjacent to the small drainage ditch.

The color aerial photographs of November 28, 1984, reveal continued operations of the Chemetco facility. The slag piles and the scrubber sludge piles have grown. A small body of liquid is present near the scrubber sludge. The waste lagoons are still in operation but the adjacent waste pits are being emptied by excavation equipment. This area at the south end of the site has been expanded to be used as a dump for waste material.

PHOTO ANALYSIS

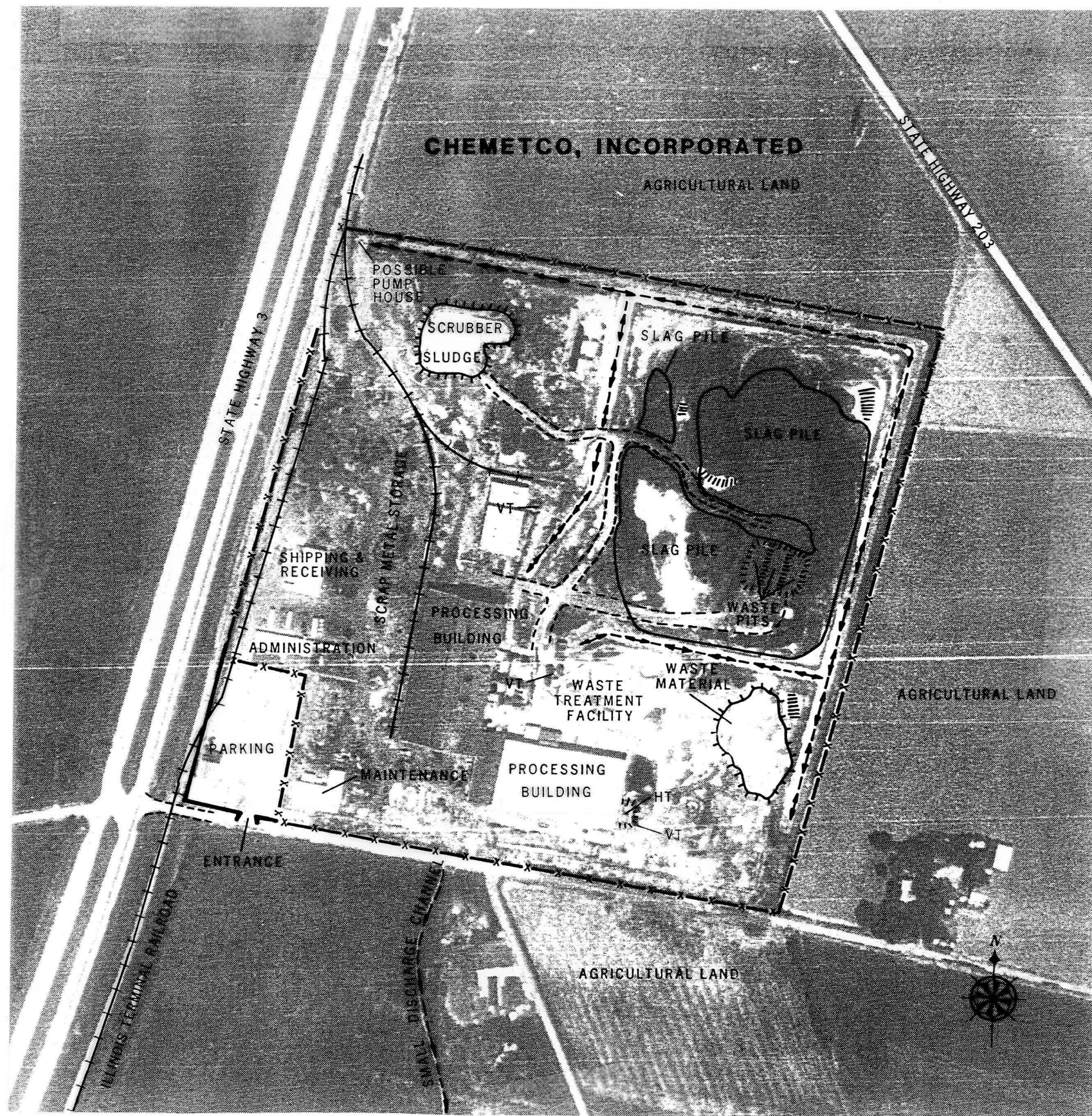
JUNE 10, 1978

The Chemetco facility, located two miles south of Hartford, Illinois, occupies about 40 acres adjacent to State Highway 3 and the Illinois Terminal Railroad. There are two rail spurs into the facility and a single road entrance along the south boundary. The predominate features of the site are the large slag piles, the processing buildings, a waste treatment area, two small mounds, and a 30-foot wide ditch. There are two small vertical tanks and one horizontal tank present. Only the horizontal tank appears contained.

The slag pile is about 6 acres in size in the northeast corner of the site. There are three 40 by 95 foot waste pits near the center of the pile with the dumping point at the south end of the pit. A small 0.5-acre mound of possible scrubber sludge is located in the northwest corner of the site while a similar sized pile of probable waste material can be seen in the southeast corner.

A 30-foot wide ditch extends across the north boundary and along most of the east boundary. Two other ditches extend from the center of the site to the north and to the east. A possible pump house is present at the west end of the north ditch. The flow of liquid in the ditches cannot be determined as there are no indications such as slope or wave action. A portion of the liquid is very light in tone indicating the possible presence of contaminants. The total length of all the ditches is 3,535 feet.

A single small drainage channel is evident in a field south of the site which may be used for discharge of waste liquid from the site. This channel is connected to Long Lake.



INTERPRETATION CODE

BOUNDARIES AND LIMITS

- x-x-x-x FENCED SITE BOUNDARY
- UNFENCED SITE BOUNDARY
- x x x x x x FENCE
- — — — STUDY AREA

DRAINAGE

- DRAINAGE
- FLOW DIRECTION
- - - - INDETERMINATE DRAINAGE

TRANSPORTATION/UTILITY

- ==== VEHICLE ACCESS
- + + + + RAILWAY

SITE FEATURES

- ||||| DIKE
- SL STANDING LIQUID
- SL STANDING LIQUID
- EXCAVATION, PIT (EXTENSIVE)
- ⊖ MOUNDED MATERIAL (EXTENSIVE)
- MM MOUNDED MATERIAL (SMALL)
- CR CRATES/BOXES
- DR DRUMS
- HT HORIZONTAL TANK
- PT PRESSURE TANK
- VT VERTICAL TANK
- CA CLEARED AREA
- DG DISTURBED GROUND
- FL FILL
- IM IMPOUNDMENT
- LG LAGOON
- OF OUTFALL
- SD SLUDGE
- ST STAIN
- SW SOLID WASTE
- TR TRENCH
- VS VEGETATION STRESS
- WD WASTE DISPOSAL AREA
- WL WETLAND

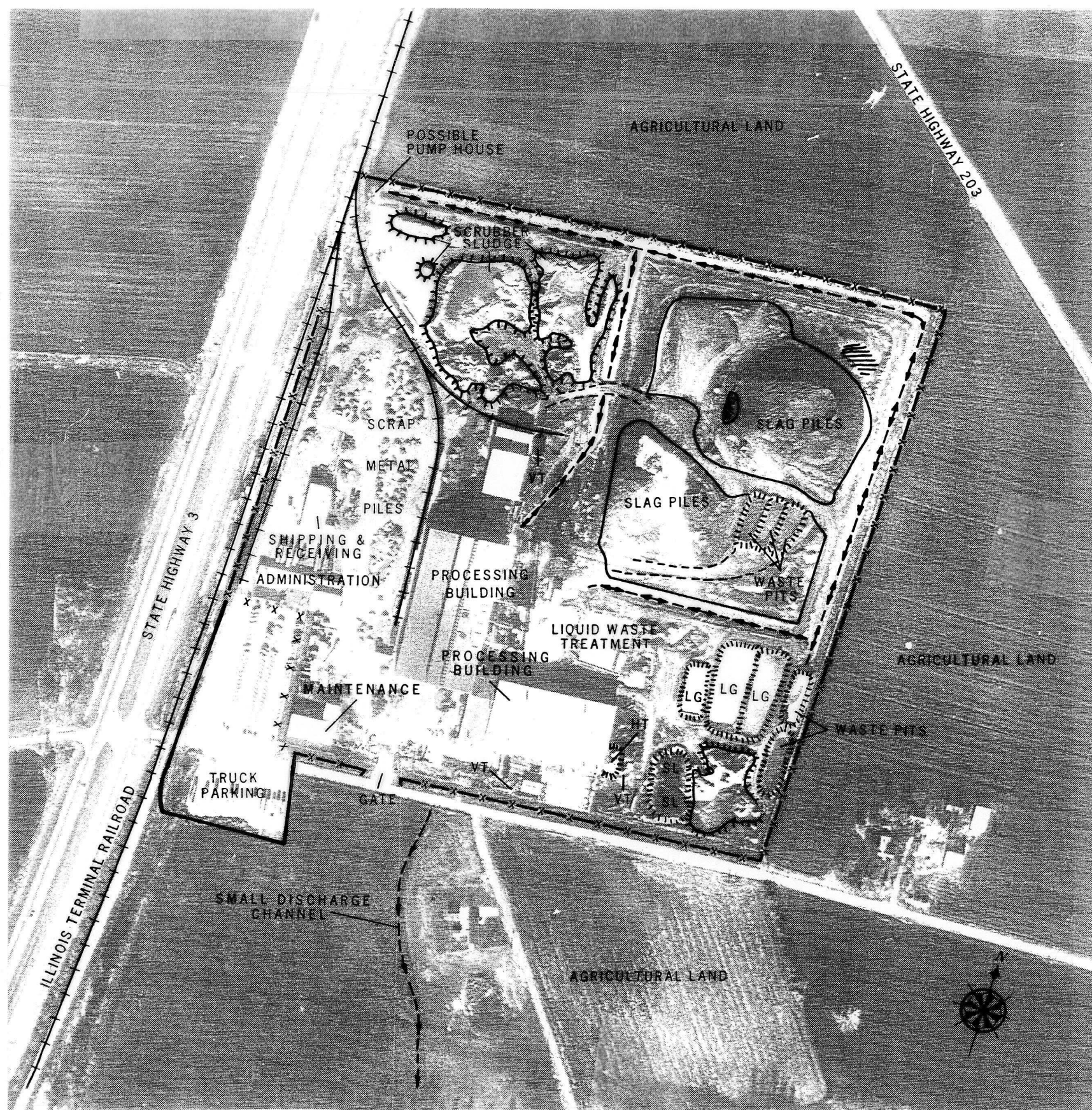
Figure 3. Chemetco, Inc., June 10, 1978. Approximate scale, 1 inch equals 275 feet.

DECEMBER 14, 1980

Analysis of the 1980 photographs reveal only a very small increase in size in the site but some significant changes within the site. In the southwest corner across the road which is the south boundary of the site fill material has been brought in to create a truck parking area. This area is about one acre in extent so the facility now is about 41 acres.

Within the site the slag piles in the northeast corner are slightly larger and higher. The three waste pits are still present and appear to contain some waste material. The scrubber sludge pile in the northwest corner is much larger indicating continued processing activity at the site. In the southeast corner of the site three lagoons have been built. The largest of these is approximately 220 by 80 feet while the smallest is 110 by 55 feet. A portion of the adjacent ditch has been converted into two waste pits eliminating approximately 275 feet of the ditch. Both of these pits contain waste material. To the south of the lagoons there is a mound of material and an adjacent pool of liquid which is surrounded by a dike. A third vertical tank is present but does not appear to be contained.

The remainder of the site appears much as it did in 1978 with the exception of the prominent new entrance along the south boundary. The small discharge channel is still present but it is not possible to confirm if any liquid is present.



INTERPRETATION CODE

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- x-x-x-x FENCED SITE BOUNDARY
- UNFENCED SITE BOUNDARY
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- - - - - STUDY AREA

DRAINAGE

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- VS VEGETATION STRESS
- WD WASTE DISPOSAL AREA
- WL WETLAND

Figure 4. Chemetco, Inc., December 14, 1980. Approximate scale, 1 inch equals 275 feet.

APRIL 23, 1982

Analysis of the color aerial photographs reveal several small changes in the overall appearance of the site. The slag piles have grown in size to about 8 acres while the scrubber sludge piles are about 2.6 acres. A fourth waste pit has been added in the slag pile area but it appears to be open at the north end.

The waste lagoons all contain liquid while the two adjacent waste pits appear full. The mound present in 1980 is slightly smaller in 1982 and the adjacent pool of liquid has either been removed or has been covered over. The shipping/receiving area, the processing buildings, waste treatment area, and the maintenance area remain the same as in 1980.

The area south of the main facility that was a parking lot area has been expanded by about 1 acre and appears to be used for dumping of waste material. Drainage from this dump area is south toward Long Lake. A small area (150 by 100 feet) adjacent to the discharge channel appears to have suffered some vegetation stress.



INTERPRETATION CODE	
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X X X X X X	FENCE
————	STUDY AREA
DRAINAGE	
-----	DRAINAGE
———>	FLOW DIRECTION
----->-----	INDETERMINATE DRAINAGE
TRANSPORTATION/UTILITY	
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+++++	RAILWAY
SITE FEATURES	
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TR	TRENCH
VS	VEGETATION STRESS
WD	WASTE DISPOSAL AREA
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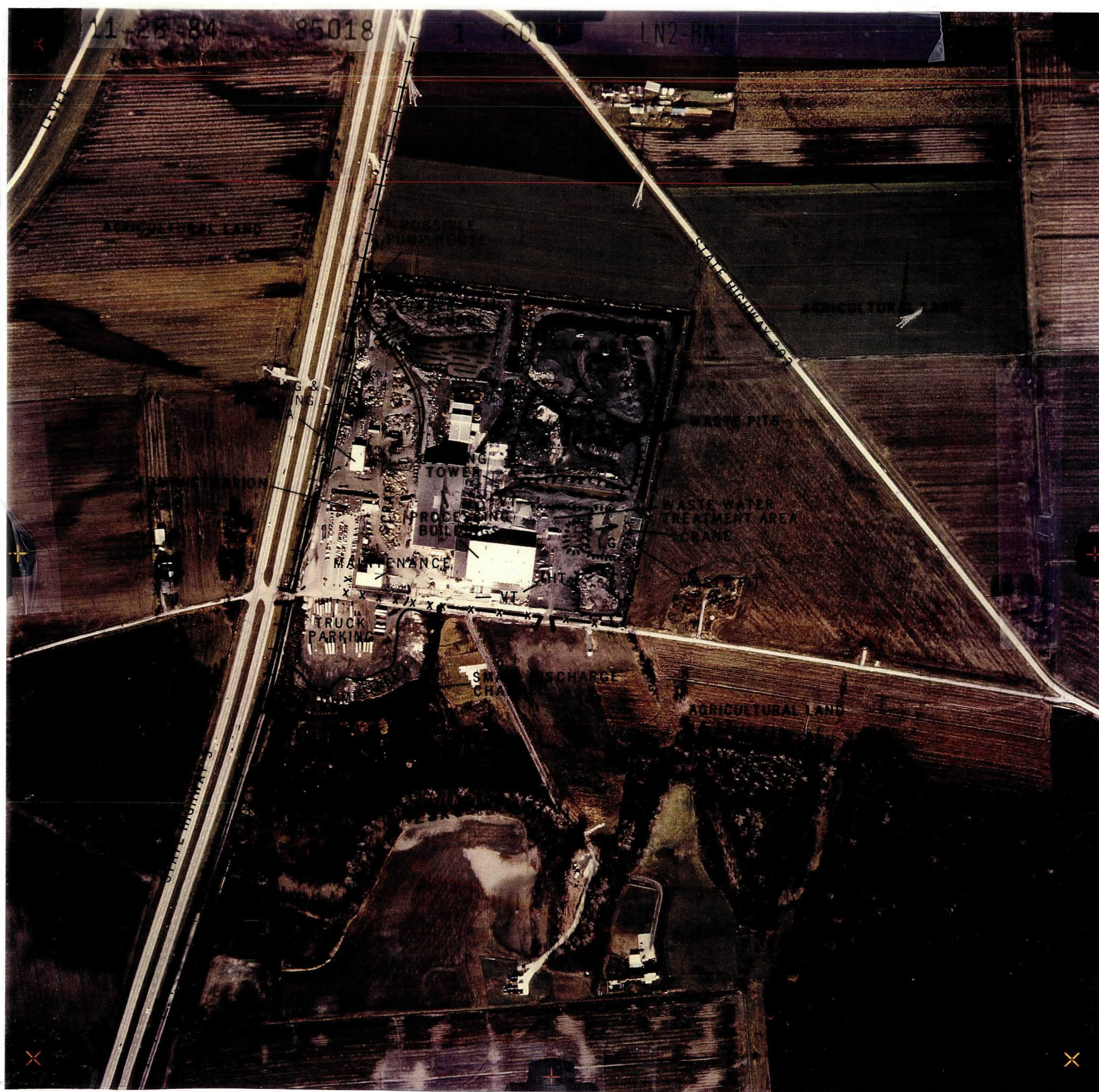
Figure 5. Chemetco, Inc., April 23, 1982. Approximate scale, 1 inch equals 500 feet.

NOVEMBER 28, 1984

The color aerial photographs of November 28, 1984, reveal continued activity at the Chemetco facility. There appears to be more scrap piles in the shipping and receiving area. The scrubber sludge piles have grown and two bodies of liquid are visible. These pools of liquid total about 1.35 acres. The slag piles remain much the same as in 1982 and there are still four waste pits within the piles.

In the southeast corner the large lagoon still contains liquid but the smaller lagoon now appears to be filled with solid material. The two waste pits east of the lagoons appear full but it appears from the presence of an excavation crane that one of the pits is being emptied. Near the center of the site adjacent to the processing building and the waste treatment area, there are two cooling towers constructed since the overflight of 1982.

The dump area to the south of the site has been expanded further out into the adjacent field. This adds another 3 acres to the site, increasing the overall site size to about 45 acres. The different tones of the material in the dump indicates a variety of wastes are present. Drainage from this area is toward the south and Long Lake.



INTERPRETATION CODE

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Figure 6. Chemetco, Inc., November 28, 1984. Approximate scale, 1 inch equals 500 feet.